PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:
Assistant Commissioner for Patents United States Patent and Trademark Office Box PCT Washington, D.C.20231 ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 26 June 2000 (26.06.00)	
International application No. PCT/GB99/03438	Applicant's or agent's file reference PADL/39804
International filing date (day/month/year) 18 October 1999 (18.10.99)	Priority date (day/month/year) 19 October 1998 (19.10.98)
Applicant ARTAMONOV, Sergey et al	

1. The designated Office is hereby notified of its election made:

   [X] in the demand filed with the International Preliminary Examining Authority on:

   09 May 2000 (09.05.00)

   [ ] in a notice effecting later election filed with the International Bureau on:

2. The election   [X] was

   [ ] was not

   made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Olivia RANAIVOJAONA
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

Form PCT/IB/331 (July 1992)   GB9903438

PATENT COOPERATION TREATY

PCT

REC'D 29 DEC 2000

INTERNATIONAL PRELIMINARY EXAMINATION REPORT PCT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PADL/39804	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)

International application No. PCT/GB99/03438	International filing date *(day/month/year)* 18/10/1999	Priority date *(day/month/year)* 19/10/1998

International Patent Classification (IPC) or national classification and IPC H04N7/36

Applicant IDM EUROPE LIMITED et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 13 sheets, including this cover sheet.

    ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

    These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

    I   ☒   Basis of the report

    II   ☐   Priority

    III   ☒   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

    IV   ☒   Lack of unity of invention

    V   ☒   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement

    VI   ☐   Certain documents cited

    VII   ☒   Certain defects in the international application

    VIII   ☒   Certain observations on the international application

Date of submission of the demand 09/05/2000	Date of completion of this report 22.12.2000
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Loeser, E Telephone No. +49 89 2399 8482

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. **PCT/GB99/03438**

I. Basis of the r p rt

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

   Description, pages:

1-6,8-31	as originally filed		
7,7a	as received on	11/12/2000 with letter of	11/12/2000

   Claims, No.:

17-38	as originally filed		
1-16	as received on	11/12/2000 with letter of	11/12/2000

   Drawings, sheets:

1-20	as originally filed

2. With regard to the **language,** all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description,   pages:
- ☐ the claims,   Nos.:
- ☐ the drawings,   sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

   ☐ the entire international application.

   ☒ claims Nos. 38.

because:

   ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

   ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
   see separate sheet

   ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

   ☐ no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination report cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

   ☐ the written form has not been furnished or does not comply with the standard.
   ☐ the computer readable form has not been furnished or does not comply with the standard.

IV. Lack of unity of invntion

1. In response to the invitation to restrict or pay additional fees the applicant has:

□   restricted the claims.

□   paid additional fees.

□   paid additional fees under protest.

□   neither restricted nor paid additional fees.

2. ☒   This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

□   complied with.

☒   not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

☒   all parts.

□   the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2-22,25,27-33,35,37
	No:	Claims	1, 23,24,26,34,36
Inventive step (IS)	Yes:	Claims	7-11,13-16
	No:	Claims	1-6,12,17-37
Industrial applicability (IA)	Yes:	Claims	1-38
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. C rtain bservations on th internati nal application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

1. General

The present application does not satisfy the criteria set forth
in Articles 6, 33(2) and 33(3) PCT. Details of the objections
are set out below.

2. Concerning Section VIII - Art. 6 PCT:

2.1.   Claim 1

2.1.1.
According to the description (p.7 lines 4-5), the invention aims
at overcoming the disadavantages of previous designs described
on the preceding pages. These disadvantages comprise "not being
suitable for the processing with half-pixel precision" (p.5
lines 1-2). Accordingly, it is essential to the invention to
include features which enable processing with half-pixel
precision.

In this respect, claim 1 (p.32 lines 7-10) specifies a two-
dimensional matrix of rows and columns (of) processing elements
(a) "each processing element for comparing a given area of the
current frame with at least an area of the anchor frame".

Taking further account of Figs. 2 and 4 and respective passages
in the description (pp.11-12), each of a number of S processing
elements performs a comparison of a given area of a current
frame with plural areas of the anchor frame (p.12 lines 3-13,
where it is also stated that "it is the inclusion of these four
pipelined processors in each processing element which gives the
ability to estimate motion to half-pixel accuracy".

Now, feature (a) identified above includes (due to the feature
"at least an area") a comparison with a single area of the
anchor frame. Such an arrangement would not meet the objectives

of the invention. Thus the claim's subject-matter is obscured by this discrepancy, and Art. 6 PCT is contravened.

It is therefore considered that "at least an area of the anchor frame" should read "a plural number of areas of the anchor frame".

This comment also applies to claim 6.

In this context, the claim also fails to provide a clear definition of the number n in relation to a frame or a partial area thereof.

2.1.2.
The (amended) features specified on p.32 (lines 12-16) are fully obscure. This is due to the term "field" of a frame being used.
   It is stressed that in the art, a field is typically one of two interlaced fields that may form a frame, or even used as a synonym for a frame.
   Using this interpretation, a column of the matrix would have to simultaneously process an entire video field of eg 200x400 pixels. This is considered impossible given the described structures. For these reasons, the claimed subject-matter is considered to lack clarity (Art. 6 PCT contravened). What is more, a basis in the description that clearly discloses the claimed feature cannot be identified.
   It is to be noted that these views would change if the term "field" were replaced by "partial area" or the like, concerning both the anchor frame and the current frame, and if further details and definitions were included in the claim, e.g. details disclosed in p.17 lines 8-25, showing the partitioning of an anchor frame into horizontal stripes, and the simultaneous feeding of "fields" representing partial areas of such stripes into the input means 20 for parallel processing by the elements of the matrix). It is reiterated that the meaning of the number

n is unclear, too.

2.1.3.
The claim pertaining to a parallel processor for estimating
motion, it fails to provide a feature defining on which basis
motion is decided upon. The mere provision of "means for
selecting ... and area" is considered insufficient in this
context.

It is considered that an additional definition is required
that specifies means enabling the determination of which of the
plural areas of the anchor frame corresponds to the area of the
current frame.

Such a feature missing in claim 1, it fails to provide all
the features that are essential to its operation, and Art. 6 PCT
is contravened.

2.2.   Claim 11

The feature "separated for full f(p!)ixels and half pixels
obtained by horizontal ... interpellation (interpolation!)"
fails to clearly define by what the claimed areas are different
from each other (see claim 13?). Thus Art. 6 PCT is contravened.

2.3.   Claim 38

The claim fails to specify clear criteria on which the various
calculations are based. In this context, the vague features
relating to "the time period required", "time interval requi-
red", "to enable .. in given time", "necessary to implement"
used in the claim are considered insufficient in this respect.
By such features, an attempt is made in the claim to define the
claimed subject-matter in terms of the result to be obtained
rather than by clear technical definitions as required by Art. 6
PCT. Thus the requirement of clarity set out in Art. 6 PCT is
contravened.

3.   Concerning Section IV - Rule 13 PCT (Unity):

The following separate inventions/groups of inventions are identified:

Claim 1 : A parallel motion processor for estimating motion

Claim 38: A procedure for defining the architectural parameters of a parallel processor ... according to any of claims 1..23.

The independent claims 1 and 38 are not so linked as to form a single general inventive concept as required by Rule 13.1 PCT. The obscurity in the claims' scope is such that it is not apparent that they relate to a single inventive concept, Rule 13.1 EPC.

4.   Concerning Section V - Articles 33(2) and 33(3) PCT

4.1.   Prior art

The following documents are cited:

D1: IEEE Trans. on Circuits and Systems, vol.36 no.10 pp.1301-1308, Komarek et al.
D2: AT&T Technical Journal vol.72 no.1, pp.50-66. Ackland.
D3: Microprocessing and microprogramming, Elsevier Science Publishers BV, Amsterdam, NL, vol.41 no.5, pp. 409-423.
D4: US-A-5 659 364.
D5: EP-A-0 723 366.
D6: US-A-5 512 962.

4.2.   Claim 1

D1 (Figs. 4-8 and related text passages) discloses

- a parallel processor for estimating motion of a given portion
   of a current image frame with reference to an anchor frame;
- an input for receiving current frame data (Fig.4: reference
   data");
- an input for receiving anchor frame data (Fig.4: search area
   data);
- a two-dimensional matrix of rows and columns (of) processing
   elements,
- each processing element for comparing a given area of the
   current frame with at least an area of the anchor frame;
- wherein the matrix simultaneously compares S areas of the
   current frame with nK areas of the anchor frame (Fig.4);
- each column of processing elements simultaneously comparing a
   field (assuming field = partial area) with nK areas of the
   anchor frame,
- each row of processing elements simultaneously comparing S
   fields (assuming field = partial area) of the current frame
   data with n (n=1!) fields (areas) of the anchor frame,
- the matrix having dimensions of KxS and n being an integer;
- means for selecting from the comparison, for each area of the
   current frame, and area of the anchor frame corresponding to
   the area of the current frame;
- means for outputting data identifying the selected areas of
   the anchor frame.

The first and the last two features being implicit in each
motion estimating devices as provided in D1, and thew other
features being immediately disclosed in Figs. 4-8, the claimed
subject-matter lacks novelty (Art. 33(2) and (3) contravened).

It is to be noted that D1 does not appear to be capable of half-
pixel resolution motion estimation. However, the claim's obscure
wording prevents the reader from identifying therein any such
feature.

The disclosure of D2 (p.62 left col. paragraphs 3, 4) is consi-

dered to be of equal relevance as D1 to the subject-matter of claim 1. Accordingly, a "reference <u>macro</u>block from the current frame" is compared with "several macroblocks from the previous frame" (ie anchor frame). Since a macroblock is known to include plural blocks of each typically nx4 pixels, this feature indicates that plural areas of the current frame are simultaneously compared with plural areas of the anchor frame, as claimed in claim 1.

In view of the partly obscure features of claim 1, the disclosure of D3 (whole document; Figs.5, 12; sections 4-7) is also closely related to the claimed subject-matter.

D4 (e.g. Fig.2) and D5 (Fig.8, p.12 lines 43-53) also disclose parallel processing in relation to motion estimation.

D6 discloses motion estimation on the basis of half pixel distances, but does not disclose processing using an SxK array of processing elements.

4.3.   Claim 38

Due to the claim's deficiencies with respect to Art. 6 PCT (see paragraph 2.3 above) it is not possible to examine it as to the presence of novelty or inventive step.

4.4.   Dependent claims 2-37

The additional features of claims 2-6, although not directly disclosed by D1, are considered normal design options of the skilled person implementing the design of D1. Thus these claims can be attributed novelty, but lack an inventive step (Art. 33(3) contravened.

The full set of features of claim 7 is considered not to be compromised be the presently available prior art. This is due to the plural pipeline stages arranged in parallel within the parallel pipeline processor defined in claim 6.

The corresponding findings hold for claim 11.

Consequently, claims 7-11 are considered to meet the requirements set out in Art. 33(2) and 33(3) PCT.

Claim 12 provides additional features that are considered to be normal design options of the skilled person. Thus the claim, when depending upon any of claims 1-6, contravenes Art. 33(3) PCT.

None of the presently available prior art appears to disclose motion estimation on the basis of half-pixel distances in conjunction with a matrix of processing elements. Accordingly, the feature combinations provided by claims 13-16 appear to meet the requirements of Art. 33(2) and 33(3) PCT.

The additional features of claims 17-22 are considered obvious design options of the skilled person. Thus these claims, although apparently novel, contravene Art. 33(3) PCT because the depend upon at least one of claims 1-6 or 12.

The additional features of claim 1 (n=1) are anticipated by D1, thus the claim contravenes Art. 33(2) and 33(3) when depending upon claim 1.

The additional features of claims 25, 27-33, 35 and 37 are considered to be mere normal design options of the skilled person. Thus these claims contravene Art. 33(3) PCT because the depend on at least one claim that contravenes Article 33(2) or

33(3) PCT.

The additional features provided by claims 24, 26, 34 and 36 are anticipated by D1, so that these claims contravene Art. 33(2) when claim 24 depends upon claim 1, and contravene Art. 33(3) PCT when claim 24 depends upon any of claims 1-6, 12, 17-22.

7. Concerning Section VII: Description and other belongings

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2, D3 and D6 is not mentioned in the description, nor are these documents identified therein.

The claims are not complemented with reference signs as required by Rule 6.2(b) PCT.

The claims are not cast in the two-part form as indicated in Rule 6.3(b).

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computational performance as it searches the motion vector
of a single macroblock of the current frame and cannot
calculate motion vectors with half-pixel precision.

The invention aims to overcome or ameliorate the
disadvantages with the systems described above. In its
broadest form, the invention provides for the simultaneous
comparison of S current frame macroblocks with the nK
macroblocks of the anchor frame. Preferably, K is the
number of macroblocks in the area of the anchor frame with
the coordinates of the left upper corner, defined with
single pixel precision, 4K is the number macroblocks in
the area of the anchor frame having the coordinates of the
left upper corner corresponding to half-pixel precision.

More specifically, there is provided A parallel
processor for estimating motion of a given portion of a
current image frame with reference to a anchor frame
comprising: an input for receiving current frame data; an
input for receiving anchor frame data; a two-dimensional
matrix of processing elements each for comparing a given
area of the current frame with at least an area of the
anchor frame wherein the matrix simultaneously compares S
areas of the current frame with nK areas of the anchor
frame, the matrix having dimensions of KxS and n being an
integer; means for selecting from the comparison, for each
area of the current frame, an area of the anchor frame
corresponding to the area of the current frame; and means
for outputting data identifying the selected areas of the
anchor frame.

Embodiments of the invention have the advantage of
increasing computation performance by adding additional
unitary modules without requiring any modification of the
initial architecture or control signals, thus the system
is truly modular. Furthermore, embodiments of the
invention have the advantage that VLSI technology may be

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CLAIMS

1.   A parallel processor for estimating motion of a given
portion of a current image frame with reference to a
anchor frame comprising:
5   an input for receiving current frame data;
           an input for receiving anchor frame data;
           a two-dimensional matrix of processing elements each
for comparing a given area of the current frame with at
least an area of the anchor frame wherein the matrix
10   simultaneously compares S areas of the current frame with
nK areas of the anchor frame, the matrix having dimensions
of KxS and n being an integer;
           means for selecting from the comparison, for each
area of the current frame, an area of the anchor frame
15   corresponding to the area of the current frame; and
           means for outputting data identifying the selected
areas of the anchor frame.

2.   A parallel processor according to claim 1, wherein
the matrix simultaneously compares S areas of the current
20   frame with 4K areas of the anchor frame.

3.   A parallel processor according to claim 1 or 2
wherein the areas of the anchor frame and the current
frame are all cosized macroblocks.

4.   A parallel processor according to claim 3, wherein
25   the macroblocks comprise 16x16 pixels.

5.   A parallel processor according to claim 4, wherein
the pixels are luminance pixels.

6.   A parallel processor according to any preceding
claim, wherein each processing element comprises a
30   comparator and at least one parallel pipeline processor,
wherein the at least one parallel pipeline processor

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receives current frame image area data and anchor frame
image area data and outputs a sum of absolute differences
between the current frame image area data and the anchor
frame image area data to the comparator.

5   7.   A parallel processor according to claim 6, wherein
the parallel pipeline processor comprises a plurality of
pipeline stages and a pipeline accumulating adder for
adding the outputs of each of the pipeline stages.

8.   A parallel processor according to claim 7, wherein
10   each of the pipeline stages comprises a subtractor for
providing a differential output from anchor and current
frame data inputs, an absolute value calculator, an
accumulator adder for adding calculated absolute values
and first and second registers for holding the accumulated
15   absolute values.

9.   A parallel processor according to claim 8, wherein
the pipeline accumulating adder sums the outputs of the
second registers of each pipeline stage.

10.   A parallel processor according to claim 7, 8 or 9,
20   wherein the accumulating adder comprises a multiplexer for
receiving data inputs from the pipeline stages, an adder
for summing data inputs, a first register for holding the
output of the adder, wherein the adder receives as a
further input the content of the register, and a further
25   register for receiving the output of the first register
for output to the comparator of the processing element.

11.   A parallel processor according to any of claims 6 to
10, wherein each processing element comprises four
parallel pipeline processors, the outputs of which are
30   input to the comparator, wherein the four parallel
pipeline processors perform parallel comparison of a
single area of the current frame with four areas of the

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anchor frame separated vertically and/or horizontally by
half a pixel.

12. A parallel processor according to any preceding
claim, wherein the anchor frame data input comprises a
anchor frame buffer and a plurality of parallel processing
blocks for processing simultaneously pixels of a row of
the frame area, and a control unit.

13. A parallel processor according to claim 12, wherein
each parallel processing block comprises a first means for
generating a value of a pixel at a position offset
horizontally half a pixel from an input pixel position, a
second means for generating a value of a pixel at a
position offset vertically half a pixel from said input
pixel position, and a third means for generating a value
of a pixel at a position offset vertically and
horizontally half a pixel from said input pixel position.

14. A parallel processor according to claim 13, wherein
said first means comprises an adder and a first delay
means and performs the function h = (A+B)/2 where h is the
half pixel offset value and A and B are horizontally
adjacent input pixels.

15. A parallel processor according to claims 13 or 14,
wherein said second means comprises an adder and a delay
means and performs the function v = (A+D)/2 where v is the
half pixel offset value and A and D are vertically
adjacent input pixels.

16. A parallel processor according to claims 13, 14 or
15, wherein said third means comprises an adder and
performs the function c = (A+B+D+E)/4 where C is the value
of the offset pixel and A,B,D and E are horizontally and
vertically adjacent pixels.

PATENT COOPERATION TREA

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PADL/39804	**FOR FURTHER ACTION**	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/GB 99/03438	International filing date *(day/month/year)* 18/10/1999	(Earliest) Priority Date *(day/month/year)* 19/10/1998

Applicant IDM EUROPE LIMITED et al.

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of ____4____ sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

    a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

    b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

    ☐ contained in the international application in written form.

    ☐ filed together with the international application in computer readable form.

    ☐ furnished subsequently to this Authority in written form.

    ☐ furnished subsequently to this Authority in computer readble form.

    ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

    ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

    [X] the text is approved as submitted by the applicant.

    ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

    [X] the text is approved as submitted by the applicant.

    ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. ___3___

    [X] as suggested by the applicant.   ☐ None of the figures.

    ☐ because the applicant failed to suggest a figure.

    ☐ because this figure better characterizes the invention.

Form PCT/ISA/210 (first sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   H04N7/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 723 366 A (GRAPHICS COMMUNICATION LAB) 24 July 1996 (1996-07-24)	1-17,22, 23
Y	abstract figures 2,3,8,10 page 3, line 49 -page 4, line 3 page 8, line 43 - line 58 page 9, line 38 - line 41 page 12, line 43 - line 53	24-37
A	page 27, line 52 -page 28, line 16	18-21,38

-/--

X	Further documents are listed in the continuation of box C.

X	Patent family members are listed in annex.

Date of the actual completion of the international search	Date of mailing of the international search report
22 February 2000	29/02/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Berbain, F

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category°	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	ACKLAND B D: "A VIDEO-CODEC CHIP SET FOR MULTIMEDIA APPLICATIONS" AT & T TECHNICAL JOURNAL,US,AMERICAN TELEPHONE AND TELEGRAPH CO. NEW YORK, vol. 72, no. 1, 1 January 1993 (1993-01-01), pages 50-66, XP000367735 ISSN: 8756-2324 the whole document ---	24-37
A	US 5 512 962 A (HOMMA HIDEKI) 30 April 1996 (1996-04-30) abstract figures 1-4 column 2, line 44 - line 50 column 3, line 11 - line 32 ---	1-38
A	US 5 594 813 A (FANDRIANTO JAN ET AL) 14 January 1997 (1997-01-14) column 5, line 26 -column 6, line 17 ---	1-38
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